

What Is Claimed Is:

1. Apparatus for winding a coil of wire on a segment of a stator for a dynamoelectric machine, which stator has a central longitudinal axis spaced from the segment but substantially parallel to a longitudinal  
5 dimension of the segment, the segment including joining areas and first and second, substantially parallel, longitudinal slots on respective opposite sides of a longitudinal pole, the slots having generally U-shaped  
10 cross sections and being inclined toward one another toward the bases of their U shapes, the coil being wound around the pole and partly in the slots, the apparatus comprising:

a drive structure adapted to rotate the  
15 segment about a rotation axis that is substantially perpendicular to the longitudinal axis;

a wire guide structure adapted for rotation with the segment and for guiding wire into the slots; and

20 a wire source that is located radially out from the wire guide structure but that does not rotate about the rotation axis, the wire guide structure having surface portions that are shaped to guide wire from the wire source to wind around the pole, including  
25 alternately in the first and second slots, as the segment and the wire guide structure rotate about the rotation axis;

wherein the wire is guided into the slots from a position located on one side of a plane containing  
30 the joining areas and the longitudinal axis and the slots are located on the other side of the plane.

2. The apparatus defined in claim 1 wherein the wire guide structure comprises:

a first substructure adapted to hold the segment, while leaving the slots substantially

5 unobstructed; and

a second substructure spaced from the first substructure so that a passageway for wire is defined between the first and second substructures.

3. The apparatus defined in claim 1 wherein the wire guide structure is further configured to translate along the rotation axis.

4. The apparatus defined in claim 1 wherein the wire source is configured to move in a direction parallel to the rotation axis.

5. The apparatus defined in claim 1 wherein the wire guide structure comprises wings configured to align the wire with an opening to each of the slots.

6. The apparatus defined in claim 1 wherein the wire guide structure comprises curved surfaces configured to draw the wire into each of the slots.

7. The apparatus defined in claim 1 wherein the wire guide structure comprises a ridge configured to keep the wire raised and to draw the wire toward a surface of each of the slots which is radially outermost  
5 with respect to the longitudinal axis.

8. The apparatus defined in claim 1 wherein the wire guide structure comprises a support surface configured to support the wound wire at an end face of the pole.

9. The apparatus defined in claim 1 wherein the wire guide structure comprises a wall configured to limit bulging of the wound wire at an end face of the pole.

10. The apparatus defined in claim 1 wherein the wire guide structure is configured to engage the pole.

11. The apparatus defined in claim 1 wherein the wire guide structure is configured to clamp the segment.

12. The apparatus defined in claim 1 wherein the wire guide structure supports the segment.

13. The apparatus defined in claim 1 further comprising a pulley/belt transmission adapted to drive the rotation.

14. The apparatus defined in claim 1 further comprising a moveable support for the segment and the wire guide.

15. The apparatus defined in claim 1 wherein the wire source is positioned at a distance from the rotation axis wherein the distribution of the wire within the slots is altered by the positioning of the wire  
5 source.

16. A method for winding wire on a segment of a stator for a dynamoelectric machine, which stator has a central longitudinal axis spaced from the segment but substantially parallel to a longitudinal dimension of the  
5 segment, the segment including joining areas and first

and second, substantially parallel, longitudinal slots on respective opposite sides of a longitudinal pole, the slots having generally U-shaped cross sections and being inclined toward one another toward the bases of their U shapes, the coil being wound around the pole and partly in the slots, the method comprising:

rotating the segment about a rotation axis that is substantially perpendicular to the central longitudinal axis;

rotating a wire guide structure about the rotation axis; and

delivering the wire from a wire source that does not rotate about the rotation axis;

wherein the wire is guided into the slots from a position located on one side of a plane containing the joining areas and the longitudinal axis and the slots are located on the other side of the plane.

17. The method defined in claim 16 further comprising clamping the segment in the wire guide structure.

18. The method defined in claim 16 further comprising engaging the pole with the wire guide structure.

19. The method defined in claim 16 further comprising moving the wire source along a path.

20. Apparatus for winding a coil of wire on a segment of a stator for a dynamoelectric machine, which stator segment is joined to at least one other stator segment after winding to form an assembled stator, the segment including joining areas and at least first and second slots on respective opposite sides of a pole

portion of the segment and the at least first and second slots having openings for passage of wire into the at least first and second slots during winding to wind at least a portion of the coil around the pole portion, the apparatus comprising:

- 15 a drive structure adapted to rotate the segment about a rotation axis during winding of the at least a portion of the coil;
- 15 a wire source that is located radially out from the rotation axis so that the wire source is provided with relative rotation on an orbit with respect to the segment as a result of the rotation of the segment about the rotation axis; and
- 20 a wire guide structure having surface portions for guiding the wire at least between the orbit and the openings of the at least first and second slots, wherein the wire is guided into the slots from a position located on one side of a plane containing the joining areas and the slots are located on the other side of the plane.

21. The apparatus defined in claim 20 wherein the wire guide structure deviates the wire from the orbit towards the openings of the at least first and second slots.

22. The apparatus defined in claim 20 wherein the wire guide structure comprises a guide portion adapted for rotation with the segment.

23. The apparatus defined in claim 22 wherein the guide portion is configured to remain located adjacent and interior to a portion of the segment during

rotation of the segment, the guide portion drawing the  
5 wire into the at least first and second slots.

24. The apparatus defined in claim 20 wherein the wire guide structure comprises wings configured to align the wire with the openings of the at least first and second slots.

25. The apparatus defined in claim 20 wherein the wire guide structure comprises curved surfaces configured to draw the wire into the at least first and second slots.

26. The apparatus defined in claim 20 wherein the wire guide structure comprises a ridge configured to keep the wire raised and to draw the wire toward surfaces of the at least first and second slots which are radially  
5 outermost with respect to a central longitudinal axis of the segment.

27. The apparatus defined in claim 20 wherein the wire source is positioned at a distance from the rotation axis wherein the distribution of the wire within the at least first and second slots is altered by the  
5 positioning of the wire source.